

# ABSTRACT OF THE DISCLOSURE

A selective gas permeable membrane allows hydrogen to vent from a battery while preventing other gases from entering the battery. The surface of the filter membrane also catalytically combusts hydrogen and oxygen if both are evolved inside the battery and retains the resulting water for use in the battery. The membrane is made with a porous plastic substrate coated with a thin metal film permeable to hydrogen, and additional coatings. These coatings protect the surfaces, and catalytically combust hydrogen and oxygen.